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### Determinants of hepatitis B virus surface antigen positivity in adults attending sexually transmitted disease clinics in Italy

Chronic carriers of hepatitis B virus (HBV) infection (HBsAg positive subjects) represent the main source of infection in a community and are a population at highly increased risk of developing chronic liver diseases and primary hepatocellular carcinoma. A clear definition of their characteristics may offer the opportunity to focus more specific preventive campaigns. With this perspective we have analysed data from a cross-sectional epidemiological survey of patients attending sexually transmitted diseases (STD) clinics.<sup>1</sup>

Included in this study were subjects who referred themselves for the first time for suspected STD or STD treatment between March 1989 and December 1990 to two STD clinics in Bergamo and Brescia, Lombardy, Northern Italy. At the time of clinical registra-

tion, patients were asked to complete a standard questionnaire on their general characteristics and habits. Further, a blood sample was taken to establish the HBsAg status, HIV status, and to perform VDRL and TPHA tests according to standard methods. No subject had clinical or laboratory evidence of acute HBV infection. A total of 588 patients (457 men, 131 women; median age 30 years, range 17-65) agreed to participate. Less than 3% of eligible subjects refused to enter the study. The association between the variables considered and HBsAg serological status was estimated with multivariate odds ratios (OR) and their 95% confidence intervals (CI). Included in the regression equations were terms for age, sex, marital status, number of sexual partners, homosexuality in men, intravenous drug use and, in turn, various indicators of STD history or current infection.

HBsAg positivity was found in 42 subjects (7.1%, 95% CI from 5.2 to 9.9) out of the 588 screened. The prevalence of HBsAg positivity increased with age, from 4.9% in subjects aged 24 years or less to 8.6% in those aged 35 years or more. Compared with subjects aged 24 years or less, the estimated OR was 1.3 for those aged 25-34 and 1.9 for those  $\geq 35$ ; the trend in risk was however not statistically significant (table). Women tended to have a lower prevalence of infection than men (5.3% vs 7.7%), the corresponding OR being 0.4 (95% CI 0.2-0.8). Intravenous drug use was strongly related with the risk of HBsAg positivity: compared with never users, ever users had an estimated OR of positive HBsAg of 4.3 (95% CI 1.9-9.8). The risk of HBsAg positivity increased with the number of reported

Table Data of 588\* patients attending sexually transmitted disease clinics, Italy 1989-1990

	HBsAg status		Multivariate odds ratio (95% CI)†
	Negative	Positive	
Age (years)			
≤ 24	117	6	1‡
25-34	216	16	1.3 (0.5-3.5)
≥ 35	213	20	1.9 (0.6-5.6)
$\chi^2$ trend			1.69 (p = 0.19)
Sex			
Males	422	35	1‡
Females	124	7	0.4 (0.2-0.8)
Intravenous drug use			
Never	476	30	1‡
Ever	42	10	4.3 (1.9-9.8)
No. sexual partners over the last three years			
0	48	3	1‡
1-2	200	13	1.0 (0.2-4.1)
3-5	125	9	1.2 (0.3-5.3)
≥ 6	95	9	1.4 (0.3-5.8)
$\chi^2$ trend			1.81 (p = 0.18)
Age at first intercourse			
≤ 17	229	18	1‡
18-20	191	18	0.9(0.4-2.0)
≥ 21	93	6	1.1 (0.4-3.2)
Homosexuality in men			
No	367	29	1‡
Yes	55	6	1.6 (0.8-4.2)
TPHA positive test			
No	484	31	1‡
Yes	62	11	2.6 (1.1-6.3)
VDRL positive test			
No	486	36	1‡
Yes	60	6	0.9 (0.3-2.4)
HIV infection			
No	518	34	1‡
Yes	24	6	2.3 (1.0-6.4)

\*In some cases the sum does not add up to the total because of missing values.

†CI indicates confidence interval.

‡Reference category.

sexual partners over the 3 years prior to entry in the study. Compared with subjects reporting no or one sexual partner, the OR were 1.2 for those reporting two to five sexual partners and 1.4 for six or more; the trend in risk however was not statistically significant. No relationship emerged with age at first intercourse. Compared with men with no homosexual intercourse, the OR for HBsAg positivity was 1.6 (95% CI 0.8–4.2) for those reporting homosexual intercourses. An about twofold increased OR of HBsAg positivity was associated with TPHA positive assay (OR 2.6, 95% CI 1.1–6.3) and HIV status (OR 2.3, 95% CI 1.0–6.4), but no relationship emerged with the results of VDRL test.

This study included subjects from a population at high risk of HBV infection (subjects attending STD clinics) and cannot be considered representative of the general population. Nevertheless these results may in relative terms offer some quantitative estimates of the role of major determinants of HBsAg positivity in Italy. The results of this study are in general agreement with studies from other populations. The frequency of HBsAg positivity becomes more frequent with age (although it is not understood whether this is due to an age or cohort effect)<sup>2,3</sup> and the male-female ratio of HBsAg prevalence was reportedly greater than unity in several countries.<sup>3,4</sup> In this study intravenous drug use and number of heterosexual partners explained respectively 19% and 12% of HBsAg positive cases. In the USA, the proportion of HBV infected males in the late 1980s accounted for by parenteral drug use and heterosexual exposure were respectively 27% and 26%.<sup>5</sup> Another finding is the positive relation between history of STD, TPHA positive test and HBsAg positivity. No relationship emerged, however, between VDRL test results and HBsAg positivity. According to the specificity of these tests for syphilis and their different reactivity in early and late stages of the infection, it is conceivable that an association of HBsAg with TPHA, but not with VDRL, could be observed if both hepatitis infection and syphilis had similar modality of transmission and the two infections occurred in the same period in the past. More in general, the association between TPHA and HBsAg positivity may be interpreted in terms of similar risk factors or of an easy way of infection for HBV in patients with vaginal infection.

Finally, HIV infection was strongly related with the risk of HBsAg positivity and this finding persisted after taking into account the effect of drug use and number of partners. This suggests that specific high-risk behaviours may be the underlying "mechanism" favouring both HIV and HBsAg positivity, for example, unprotected promiscuity in subjects with a high number of sexual partners or exchange of needles by intravenous drug users.

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FABIO PARAZZINI  
LUCA CAVALIERI D'ORO  
COSETTA BIANCHI  
CARMELA MEZZANOTTE  
Istituto di Ricerche Farmacologiche "Mano Negri",  
via Eritrea 62,  
20157 Milano, Italy  
LUIGI NALDI  
GIAN LORENZO IMBERTI  
BRUNO PANSERA  
TULLIO CAINELLI  
Clinica Dermatofilopatica,  
Università di Milano,  
Ospedali Riuniti, Bergamo, Italy  
ANNA CARLINO  
SEVERO GRAEFEMBERGHI  
Divisione di Dermatologia,  
Ospedale Civile di Brescia, Italy

Address correspondence to Dr F Parazzini.

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### Emerging incidence of vulval intra-epithelial neoplasia in young women with genital warts

Historically, vulval intra-epithelial neoplasia (VIN) has been considered to be an uncommon disease, seen usually in the post-menopausal woman. In a study at The Middlesex Hospital in London, the mean age for females with VIN was 63 years<sup>1</sup> although recent reports from Campion *et al*<sup>2</sup> suggest a modal age of 30 years and that the incidence in the young female is increasing.

In our clinic, in the short space of 11 months, we have diagnosed nine cases of VIN and we feel its incidence is probably even commoner in young females than it is generally believed to be, especially amongst those attending genitourinary clinics.

All new patients with genital warts were questioned to assess the presence or absence of pruritus, burning, dyspareunia or discolouration of skin. These are the commonest symptoms of VIN. All patients denied past histories of sexually transmitted diseases (STDs), including HSV. All suspicious lesions were biopsied. Of 11 cases biopsied, nine showed VIN on histology (table). The other two showed hyperkeratosis and wart virus changes but no VIN. Seven of the nine positives were graded as VIN III. All of them had colposcopies and four (44.5%) were found to have CIN.

The nine females with VIN had a mean age of 31.3 (range 19–57) and 6 (67%) had solitary vulval patches.

Routine tests for candida, *T vaginalis*, *G vaginalis*, gonorrhoea, *Chlamydia trachomatis* and syphilis serology were negative. Cervical